



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

HIGH-SCHOOL EFFICIENCY—HOW RATED?¹

FRED C. AYER
University of Oregon

The attempt to rate or measure the efficiency of a high school is not rendered easy by the presence of previous example or by the availability of scales or standards definitely adapted to the purpose. Although the high school has had a long and honored career as a distinct unit in our system of public education and is, and has been, frequently defined in terms of aims, units, and courses, it has failed signally to impress its individuality in terms which submit readily to quantitative measurement. The typical public-school surveys of the past decade have ordinarily exhibited the high school statistically merely as four additional elementary grades or, at best, have devoted relatively inconspicuous amounts of time and space to secondary education. Moreover, the tests and scales of educational achievement which seem fairly on the way to practical utility, such as those in arithmetic or handwriting, are almost exclusively aimed at elementary education and for the greater part neglect secondary education.

Notwithstanding these apparent difficulties, no other part of our educational system has undergone so much inspection and standardization as has the high school. Historically, the high school became subject to external scrutiny and foreign visitation the moment it undertook the work of preparing its students for college. As an agency for strengthening the high school in its preparatory function, college supervision of high-school standards has been of the greatest importance. Indeed, in so far as college preparation correlates with it, the same may be said of general efficiency. On the other hand, it seems evident that the attempt of the high school to measure up to the standards set by the college has blinded it to its more individual aims and to the necessity for

¹ Presented at the University of Oregon Educational Conference, June, 1916.

establishing norms and ideals in its own field of educational endeavor.

Let us turn our attention for the moment to the methods of the several agencies which up to the present have attempted to rate high-school efficiency. As already intimated, the college has been a powerful agency in this field. Its work has been strengthened in recent years by the organization of such co-operative bodies as the North Central Association of Colleges and Secondary Schools. The items of efficiency in this connection have been stipulated primarily to secure college preparatory efficiency, although, particularly in recent years, points of general efficiency have been mentioned more specifically. Such points have been stated ordinarily in terms of minimum requirement, such as: 15 units for graduation, college graduation for teachers, 6 recitation periods per day per teacher, a minimum of 3 teachers, so many pupils per teacher, adequate laboratory facilities, etc. The existence of such minimum essentials has been determined by the proper filling in and filing of statistical blanks by the school in question and by rapid personal inspection of the high school by an official visitor. In opposition to this, or in connection with it, many colleges and universities have maintained the familiar entrance-examination system. A few have rested their final judgment upon the student's progress after entering college.

The various state departments of education have constituted a second agency for rating the efficiency of high schools. This agency has aimed primarily at the general growth of secondary education and has been largely instrumental in the rapid spread of the high-school movement in many states. For the most part, state departments have been concerned only with minimum requirements. These have been set high enough to stimulate, but low enough not to discourage, incipient or developing high schools. The items of efficiency have pertained to a limited number of easily ascertainable points, such as: number and preparation of teachers, the courses of study followed, sanitary equipment, and laboratory apparatus. The method of inspection has been similar to that used by the university or college inspector, save that the state inspector has had the advantage of legal authority.

Finally, there has been the educational expert or commission of experts. A somewhat more comprehensive study of efficiency has usually been attempted by this agency and the number of points considered has been materially larger. Besides points previously mentioned, such items as the holding power of the high school and the relation of the school to community needs have been frequently mentioned.

All of the foregoing agencies have attempted in an indirect way to set up standards of high-school efficiency, but, so far as I am aware, no attempt has been made to elaborate a scale of points for a thoroughgoing measurement of the high school as an educational institution in itself. The inadequacy and incompleteness of the foregoing methods of rating high-school efficiency lie in the fact that neither of the first two agencies mentioned attempt to measure more than minimum efficiency, while the other has never devoted itself specifically to the full scope of the problem. There is manifestly a serious need for a scale or an outline which will enumerate the essential points of high-school efficiency and provide a method by which it may be more adequately rated. The following "Analytical Outline of High-School Efficiency" is the result of an attempt to meet this need.

ANALYTICAL OUTLINE OF HIGH-SCHOOL EFFICIENCY

- I. Grounds
 1. Location
 2. School-garden and agricultural facilities
 3. Play and recreational facilities
- II. Building and General Equipment
 1. General adequacy—size, entrance, and internal plan
 2. Janitorial service
 3. Health equipment—light, heat, ventilation, toilet, etc.
 4. Furniture, statuary, and decorations
 5. General rooms—auditorium, study, library, etc.
 6. Special rooms—office, laboratory, locker, etc.
- III. Special Equipment
 1. Library and study-room
 2. Laboratory
 3. Industrial and vocational
 4. Fine arts
 5. Classroom—tables, devices, supplies, etc.
 6. Gymnasium and playground

IV. General Educational Program

1. Types of education—preparatory, physical, cultural, vocational, and socializing
2. Relation to community needs
3. Wider use activities
4. Records, reports, and publicity
5. Economical organization—comparative costs

V. Special Educational Program

1. Organization of courses—flexibility, adaptability, sequence, and correlation
2. Extra classroom activities
3. Medical inspection and supervision
4. Supervision of instruction
5. Measurement of instruction
6. Requisites for graduation

VI. Efficiency of Teachers

1. General adequacy—number and co-operation
2. Time allotment and size of classes
3. Individual efficiency (see Boyce score card):
 - a) Personal equipment
 - b) Social and professional equipment
 - c) School management
 - d) Technique of teaching

VII. Progress of Pupils

1. Drawing power of school
2. Holding power of school
3. Guidance into proper courses
4. Effective classification
5. Rate of promotion

In the time which remains, I shall discuss briefly the sources, the construction, and the possible uses of the foregoing outline. In order that the outline might include all of the characteristics which are representative of efficiency in typical American high schools, I have made a careful analysis of the literature^x which bears upon this question. This includes four types of source material. The first type is the literature which describes the high-school standards set up by state departments of education, educational foundations, and various committees and associations. It is concerned chiefly with minimum requirements of a nature already indicated.

The second source material embraces the literature of secondary education, which pertains to the aims, methods, and organization

^x See accompanying Bibliography.

of high schools, such as the recent books by Sachs, Stout, Johnston, Monroe, Judd, and Parker, and the large number of shorter treatments similar in nature to Eliot's "Changes Needed in American Secondary Education," and Martin's "Peculiar Obligation of the Public High School."¹ The almost overwhelmingly large amount of current literature of this type is in itself of great significance to the importance of this problem.

A third source includes the reports of educational surveys which bear upon the high-school question. Of this type are the Portland, Springfield, and San Antonio city surveys, the Ohio and Vermont state surveys, and the general surveys of high-school education in Kansas and Colorado.

A final source exists in the descriptions of the various educational tests, scales, and score cards which have been elaborated to measure educational efficiency. Particularly valuable among these are Boyce's *Method for Measuring Teaching Efficiency* and Strayer's "Score Card for School Buildings and Equipment."

Having assembled the many points of high-school efficiency revealed by a study of the foregoing source materials, I still had before me the more difficult problem of classifying and organizing them into a satisfactory analytical outline. Such an outline should definitely satisfy four requirements: (1) it should include all essential points; (2) it should be sufficiently brief to rest easily within the mental grasp of the ordinarily well-informed administrator; (3) it should be sufficiently detailed to afford an analysis of efficiency; (4) its separate specific items should not duplicate or encroach upon each other. As a result of painstaking study and experimentation, I submit the present outline as a solution of the foregoing problem.

Time does not at present permit a detailed discussion of the individual points of the outline. This I hope to offer in printed form at a later date. A mere summary must suffice for the present. In selecting the terminology of the several items, I have endeavored to follow the best educational practice. The 37 individual items cover all possible points of high-school efficiency. They have been

¹ For references, see Bibliography.

classified for purposes of more ready analysis into 7 groups with separate major headings, namely:

- I. Grounds
- II. Building and General Equipment
- III. Special Equipment
- IV. General Educational Program
- V. Special Educational Program
- VI. Efficiency of Teachers
- VII. Progress of Pupils

The three topics under I, Grounds, i.e., (1) Location, (2) School-garden and agricultural facilities, and (3) Play and recreational facilities, need no comment here.

The items under II, Building and General Equipment, are equally significant, but some may wonder what bearing the latter part of point (4) Statuary and decorations, may have upon high-school efficiency. To my mind this is a distinctly important factor. Aesthetic surroundings have long been recognized as a prime agency in forming good taste and a discriminating appreciation of the beautiful. Probably the most potent influence of static beauty upon high-school pupils is exerted by the decorations which ornament the walls and interiors of the rooms in which they spend so large a share of their waking time. The aesthetic appeal of beautiful art products cannot fail to exert a powerful refining influence upon the pupils. The detailed items which may be considered under the major groups I, II, and III, of the present outline of high-school efficiency are well indicated in Strayer's "Score Card for City School Buildings,"¹ of which the following is a brief form:

SCORE CARD FOR SCHOOL BUILDINGS AND EQUIPMENT

- I. Site
 - A. Location. 1. Accessibility. 2. Environment.
 - B. Drainage. 1. Elevation. 2. Nature of Soil.
 - C. Size and Form.
- II. Building
 - A. Location. 1. Orientation. 2. Position on Site.

¹ For an elaborate discussion of this score card, see G. D. Strayer, "Score Card for City School Buildings," *Fifteenth Yearbook of the National Society for the Study of Education*, Part I, chap. iii (The University of Chicago Press, 1916).

- B. External Structure. 1. Type. 2. Material. 3. Height. 4. Roof.
5. Entrances. 6. Aesthetic Balance. 7. Condition.
- C. Internal Structure. 1. Stairways. 2. Corridors. 3. Basement.
4. Attic.

III. Service Systems

- A. Heating and Ventilation System. 1. Kind. 2. Installation. 3. Air Supply. 4. Distribution.
- B. Fire Protection System. 1. Apparatus. 2. Fireproofness. 3. Escapes. 4. Electric Wiring. 5. Fire Doors.
- C. Cleaning System.
- D. Artificial Lighting System.
- E. Electric Service Systems. 1. Clock. 2. Bell. 3. Telephone.
- F. Water Supply System.
- G. Toilet System. 1. Distribution. 2. Fixtures. 3. Adequacy. 4. Seclusion. 5. Sanitation.
- H. Mechanical Service Systems. 1. Elevators. 2. Book-lifts. 3. Waste-chutes.

IV. Classrooms

- A. Location and Connections.
- B. Construction and Finish. 1. Size. 2. Shape. 3. Floors. 4. Walls.
5. Doors. 6. Closets. 7. Blackboards. 8. Color scheme.
- C. Illumination. 1. Glass Area. 2. Windows. 3. Shades.
- D. Cloakrooms and Wardrobes.
- E. Equipment. 1. Seats and Desks. 2. Teacher's Desk. 3. Bulletin Boards.

V. Special Rooms

- A. Large Rooms for General Use. 1. Playroom. 2. Auditorium.
3. Study-hall. 4. Library. 5. Gymnasium. 6. Lunchroom.
- B. Rooms for School Officials. 1. Offices. 2. Teachers' Room.
3. Nurses' Room. 4. Janitor's Room.
- C. Other Special-service Rooms. 1. Laboratories. 2. Lecture Rooms.
3. Storerooms. 4. Studios.

The foregoing items stand out in concrete relief at the first consideration, but not so with the points which constitute group IV of the high-school outline, i.e., General Educational Program. A little reflection, however, makes it perfectly clear that points (1) Types of education offered, (2) Relation to the needs of the community, and (3) Wider use of the high-school activities are important factors of high-school efficiency. Some question may arise as to the validity of items (4) Records, reports, and publicity and (5) Economical organization. It must, of course, be kept in

mind that none of the factors in themselves *insure* efficiency. It is quite possible that, so far as the individual pupils are concerned, a high school might prove efficient without records, reports, publicity, or economical financial organization. But from the point of view of service due to an interested and tax-paying public, such a high school would be anything but efficient.

Items covered by *a), b), c),* and *d)* under point 3, Individual efficiency, of VI, Efficiency of Teachers, are taken from Boyce's *Methods for Measuring Teaching Efficiency*.¹ The Boyce Efficiency Record follows:

EFFICIENCY RECORD

- I. Personal Equipment
 - 1. General appearance
 - 2. Health
 - 3. Voice
 - 4. Intellectual capacity
 - 5. Initiative and self-reliance
 - 6. Adaptability
 - 7. Accuracy
 - 8. Industry
 - 9. Enthusiasm and optimism
 - 10. Integrity and sincerity
 - 11. Self-control
 - 12. Promptness
 - 13. Tact
 - 14. Sense of justice
- II. Social and Professional Equipment
 - 15. Academic preparation
 - 16. Professional preparation
 - 17. Grasp of subject-matter
 - 18. Understanding of children
 - 19. Interest in the life of the school
 - 20. Interest in the life of the community
 - 21. Ability to meet and interest patrons
 - 22. Interest in lives of pupils
 - 23. Co-operation and loyalty
 - 24. Professional interest and growth
 - 25. Daily preparation
 - 26. Use of English

¹ Fourteenth Yearbook of the National Society for the Study of Education, Part II (The University of Chicago Press, 1915).

III. School Management

27. Care of light, heat, and ventilation
28. Neatness of room
29. Care of routine
30. Discipline (governing skill)

IV. Technique of Teaching

31. Definiteness and clearness of aim
32. Skill in habit formation
33. Skill in stimulating thought
34. Skill in teaching how to study
35. Skill in questioning
36. Choice of subject-matter
37. Organization of subject-matter
38. Skill and care in assignment
39. Skill in motivating work
40. Attention to individual needs

V. Results

41. Attention and response of the class
42. Growth of pupils in subject-matter
43. General development of pupils
44. Stimulation of community
45. Moral influence

The points under group V, Results, in the Boyce outline are omitted from group VI, Efficiency of Teachers, in the present analytical outline, since they have been embodied elsewhere, notably under VII, Progress of Pupils. To some, progress of pupils may seem the all-important factor of the outline. An examination of the scope of the subordinate points, however, indicates its limitations. (1) The drawing power of the school, (2) the holding power of the school, (3) guidance into proper courses, (4) effective classification, and (5) rate of promotion, are important points and are all too often neglected, but they represent only one phase of the development of pupils. The remaining phases of educational growth are equally important and are more specifically connected with other items of the outline.

Finally, let us consider what uses may be made of an analytical outline. It is self-evident that the value of any scale of measurement, outside of its intrinsic merit, depends upon the knowledge and skill of the user. The use of an outline presupposes knowledge

of its elements and an acquaintance with the type of material to be measured. A score card is of little value to the city-bred man in buying pigs or cattle. But with this reservation, I am convinced that the value of an outline of this type is far-reaching.

In the first place, an analytical outline should prove of value in stimulating and organizing the thinking of all who are concerned with secondary education. To the layman, it should serve to exhibit more ideally something of the real scope of secondary education; to the teacher, it should serve to orient the place of individual instruction in the broader field of high-school education; and to the administrator, it should serve, first as an agency for detecting the weak points of the individual high school and, secondly, as a program of procedure for extending the activities and services of public secondary education.

In the second place, an analytical outline of high-school efficiency should prove of value to state departments, colleges, experts, and to all others who are attempting to measure or standardize the high school. It offers a comprehensive system of points which calls attention to all items of efficiency, and which may be subjected to such weighting as suits the needs of the specific inquiry. Each point may be marked according to the knowledge and skill of the person using the scale. The crudest system of marking would be merely to indicate the presence or absence of the respective points of efficiency. Better than this would be the plan of marking each item good, average, or poor, according to its individual merit. Practically any school man could go this far with the outline. In more expert hands, the outline may be used for more definite rating. Each point may be rated on a basis of 10 points, or scaled from "very poor" to "excellent," as Boyce suggests in the measurement of teaching efficiency.

The possibility of making a positively accurate score card out of the outline by assigning specific numerical values to each of the points is questionable. But that a desirable and useful scale may be thus formed is unquestionable. Such a score card may be composed by obtaining and averaging the individual judgments of a number of competent educational thinkers. The user would then have not only a comprehensive outline of efficiency to follow, but

some indication, as well, of current opinion as to the comparative values of the respective points. Such a score card is now in process of completion and, it is hoped, may be presented at an early date.

BIBLIOGRAPHY

Ayres, L. P., *The Public Schools of Springfield, Illinois*, Russell Sage Foundation, 1915.

Ballou, F. W., "Scales for the Measurement of English Composition," *Harvard-Newton Bulletin No. 2*, Harvard University, 1914.

Bobbitt, J. F., *The San Antonio Public School System*, The San Antonio School Board, 1915.

Boyce, A. C., *Methods for Measuring Teaching Efficiency*, The University of Chicago Press, 1915.

Brittain, H. L., and others, *Report of the Ohio State School Survey Commission*, Columbus, 1914.

Cubberley, E. P., "Organization, Scope and Finances of the Public School System of Oakland, California," *Oakland Board of Education Bulletin No. 8*, 1915.

Cubberley, E. P., and others, *Survey of the Public School System of Portland, Oregon*, Portland, 1913.

Davis, C. O., "The Reorganization of Secondary Education," *Educational Review*, XLII (1911), 270-301.

Eliot, C. W., "Changes Needed in American Secondary Education" (paper read before the General Education Board, 1916).

Elliott, E. C., *Provisional Plan for the Measure of Merit of Teachers*, University of Wisconsin, 1914.

Flexner, Abraham, "A Modern School" (paper read before the General Education Board, 1916).

Hanus, P. H., *School Efficiency*, World Book Co., 1913.

Henderson, J. H., "State Systems of High School Inspection," *Educational Administration and Supervision*, I (1915), 493-510.

Johnston, C. H., and others, *The Modern High School*, Scribner, 1914.

Josselyn, H. W., *Survey of Accredited High Schools and Professional Directory*, Bulletin, University of Kansas, 1914.

Judd, C. H., *Psychology of High School Subjects*, Ginn & Co., 1915.

Judd, C. H., and Counts, G. S., "A Study of the Colleges and High Schools in the North Central Association," *U.S. Bureau of Education Bulletin*, No. 6, 1915.

Leonard, R. J., *Some Facts Concerning the People, Industries and Schools of Hammond*, Hammond, Indiana, Board of Education, 1915.

Martin, G. H., "The Peculiar Obligation of the Public High School," *Educational Review*, XLIII (1912), 461-71.

Monroe, Paul, and others, *Principles of Secondary Education*, Macmillan, 1914.

Monroe, W. S., *Standard Research Tests in Algebra*, Kansas State Normal School, Emporia, Kansas.

Monroe, W. S., *The Cost of Instruction in Kansas High Schools*, Bulletin No. 2, Studies by the Bureau of Educational Measurements, Kansas State Normal, Emporia, Kansas.

National Society for the Promotion of Industrial Education, *Report of the Minneapolis Survey for Vocational Education*, Bulletin No. 21, 1916.

National Society for the Study of Education, *Standards and Tests for the Measurement of the Efficiency of Schools and School Systems*, Fifteenth Year-book, Part I, The University of Chicago Press, 1916.

Parker, S. C., *Methods of Teaching in High Schools*, Ginn & Co., 1915.

Perry, C. A., "The High School as a Social Center," chap. xxi of Johnston's *The Modern High School*, Scribner, 1914.

Pratt, Mildred C., "Score Card for Rural Schools," in *A Survey of the First Supervisory District of Oswego County, New York*, 1916.

Proceedings of the Annual Meetings of the North Central Association of Colleges and Secondary Schools, published by the Association.

Report of the Commission to Investigate the Educational System of Vermont, Vermont Printing Co., 1914.

Sachs, Julius, *The American Secondary School and Some of Its Problems*, New York, 1912.

Smith, L. H., and Judd, C. H., "Plans for Organizing School Surveys," *Thirteenth Yearbook of the National Society for the Study of Education*, The University of Chicago Press, 1914.

Stout, J. E., *The High School*, D. C. Heath, 1914.

Strayer, G. D., "Score Card for City School Buildings," in Part I, *Fifteenth Yearbook of the National Society for the Study of Education*, The University of Chicago Press, 1916.

U.S. Department of Labor, Bureau of Labor Statistics, *Vocational Education Survey of Richmond, Va.*, 1916.

Witham, E. C., "School and Teacher Measurement," *Journal of Educational Psychology*, V (1914), 267-78, 571-88.